

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in this application.

LISTING OF CLAIMS:

- 1.(Previously Presented) A transmitter for a portable radio communication apparatus comprising:

 a modulator including a first port for inputting a baseband signal, a second port for inputting a local oscillator signal, means for rectifying the input local oscillator signal to provide a conductance waveform at a multiple of the local oscillator and means for mixing the baseband signal with the conductance waveform at said multiple of the local oscillator signal frequency for up-converting the baseband signal to a radio frequency modulated carrier; and

 means for controlling the gain of the modulator thereby to control the output level of the modulator.
- 2.(Previously Presented) A transmitter according to claim 1, wherein: a local oscillator signal drives the modulator at a multiple of its frequency.
- 3.(Previously Presented) A transmitter according to claim 1, wherein:

 the means for controlling the gain of the modulator comprises current control means.
- 4.(Previously Presented) A transmitter according to claim 1, wherein:

 the modulator comprises two cross-coupled pairs of switching elements, wherein a signal input modulates the switching elements at a multiple of the local oscillator frequency.
- 5.(Previously Presented) A transmitter according to claim 4, wherein:

 said two cross-coupled pairs of switching elements comprise two cross connected long tail pairs of bipolar transistors.
- 6.(Canceled)
- 7.(Previously Presented) A transmitter of a portable radio communication apparatus comprising:

a modulator including a switching circuit, a first port for input of a baseband signal and a second port for input of a local oscillator signal to the switching circuit which provides a conductance waveform at a frequency multiple of an oscillation frequency of the local oscillator signal, and a mixer which mixes the baseband signal with the conductance waveform at the frequency multiple of the local oscillator signal frequency for up-converting the baseband signal to a radio frequency modulated carrier; and

a gain control, coupled to the modulator, which controls the gain of the modulator to control the output level of the modulator.

8.(Previously Presented) A transmitter according to claim 7, wherein:

the local oscillator signal drives the switching circuit at a multiple of a frequency of the local oscillator.

9.(Previously Presented) A transmitter according to claim 7, wherein: the gain control comprises a current control.

10.(Previously Presented) A transmitter according to claim 7, wherein the switching circuit of the modulator comprises:

two cross-coupled pairs of switching elements, wherein the local oscillator signal modulates the switching elements at the frequency multiple of the local oscillator frequency.

11.(Previously Presented) A transmitter according to claim 10, wherein: the two cross-coupled pairs of switching elements comprise two cross connected long tail pairs of bipolar transistors.

12.(Canceled)

13.(Previously Presented) A transmitter according to claim 1, wherein the means for controlling the gain of the modulator comprises controlling current through the modulator.

14.(Previously Presented) A transmitter according to claim 7, wherein the gain control comprises controlling current through the modulator.